Patent Claims:

1. Structure of optically effective diffraction security elements with a metallic reflection layer, **characterized by** a target-oriented electric code of data by additionally applied [page 8, lines 7-10] beam, grid, bow and/or circularly shaped electrically conductive structures with steep edges towards adjacent non-metallized structures in different planes [DE 197 34 855], the line thickness of the smallest electrically conductive structure which may be examined being less than or equal to 5 mm.

2. Structure of security elements of claim 1, allow examination of security elements, **characterized by** a target-oriented electric code of data by additionally applied [page 8, line 7-10] beam, grid, bow and/or circularly shaped metallized structures with steep edges towards adjacent non-metallized structures in different planes [DE 197 34 855], the line width of the smallest metallized structure which may be examined being less than or equal to 5 mm.

3. Structure of security elements of one or more of the preceding claims, **characterized by the fact** that different electrically conductive structures [claim 1] possess different electric conductivities.

4. Structure of security elements of one or more of the preceding claims, **characterized by the fact** that at least two structures within a security element possess different application thicknesses [claim 1].

5. Structure of security elements of one or more of the preceding claims, **characterized by the fact** that the width of an electrically conductive layer of constant electric conductivity corresponds to the width of at least two electrodes of an examination apparatus.

6. Structure of security elements of one or more of the preceding claims, **characterized by the fact** that the distance between two electrically conductive structures of the same and/or different electric conductivity is at least .1 mm.

7. Structure of security elements of one or more of the preceding claims, **characterized by the fact** that the additionally applied electrically conductive structures are inks or dyes [page 6, lines 14-22].

8. Apparatus for the capacitive examination of documents with optically effective diffraction security elements with a metallic reflection layer, **characterized by the fact** that a capacitively operating scanner (4, 33-35) the width of which is larger than the largest width of a document [DE 197 34 855] examines electrically conductive structures [claim 1] arranged within metallized security elements (37) by means of a plurality of transmitting electrodes (5) arranged in one or more rows in side by side relationship and with a receiving electrode (6) extending along the transmitting electrodes (5) on the same side as the document to be examined [see description of Fig. 1 as well as Fig. 1-10, 13-15] and evaluates them by electronic energizing and evaluation circuits arranged in the scanner (4, 33-35) for comparing the signal pattern of the document to be examined with corresponding reference signal patterns.

9. Apparatus of claim 8, **characterized by the fact** that at least two adjacent electrodes are arranged electrically connected.

10. Apparatus of claim 8 or 9, **characterized by the fact** that electronic energizing circuit consists of a current source, a multiplexer (10), an oscillator (11) for providing energy for the transmitting electrodes (5) and an oscillator (12) for energizing the multiplexer (10).

11. Apparatus of one or more of claims 8 to 10, **characterized by the fact** that the electronic evaluation circuit consists of a current source, an amplifier (13), a demodulator (14), a comparator (15), a micro-processor (16) with memory as well as filters for the suppression of extraneous and interference signals.

12. Apparatus of one or more of claims 8 to 11, **characterized by the fact** that the smallest distance between two transmitting electrodes (5) is smaller than .5 mm.

13. Apparatus of one or more of claims 8 to 12,**characterized by the fact** that the distance between a transmitting electrode (5) and the receiving electrode (6) is at least .5 mm.

14. Apparatus of one or more of the preceding claims 8 to 13, **characterized by the fact** that the apparatus is provided with a biasing device which guides the document to be examined parallel to the transmitting and receiving electrodes, preferably biases against the scanner.

15. Apparatus of one or more of the preceding claims 8 to 14, **characterized by the fact** that the shafts of the document transport rollers are connected to mass by sliding contacts.

16. Apparatus of one or more of claims 8 to 14, **characterized by the fact** that the apparatus is arranged in high speed document processing machines.

17. Apparatus of one or more of claims 8 to 16, **characterized by the fact** that the apparatus is arranged in manual apparatus.

18. Apparatus for use of optically effective diffraction security elements with a metallic reflection layer in documents with a structure according to one or more of claims 1 to 7, as well as use of an apparatus according to one of more of claims 8 to 17, **characterized by the fact** that electrically conductive structures are arranged in such a manner in respect of size, shape, number, hue and spacing among each other on a document to be examined

- that at least one of the electrically conductive structures may be recognized by a group A of persons with the scanner (33) structured as a hand-held apparatus;
- that at least two of the electrically conductive structures may be recognized by a smaller group B of persons with a scanner (34) installed in a high speed processing machine and equipped with software which is different from the software provided for the group A of persons;
- that at least three of the electrically conductive structures may be recognized by a very small defined group C of persons with a scanner (34) installed in a high speed processing machine (35) and equipped with software which is different from the software provided for the groups A and B of persons, and
- that the electrically conductive structures constitute codes which are visually perceptible to persons of group A, and to persons of group B visually and by decoding by software, and to persons of group C primarily by software not available to persons of groups A and B.